Primary Care Workforce Planning: A Fit-for-Purpose Toolkit for the City of Toronto

Ontario Health Toronto & Canadian Health Workforce Network

Final Report

http://www.ontariohealthprofiles.ca/ontariohealthtoronto/index.php

May 25, 2022

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Acknowledgements

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Ontario Health Toronto Health System Strategy, Planning & Implementation team

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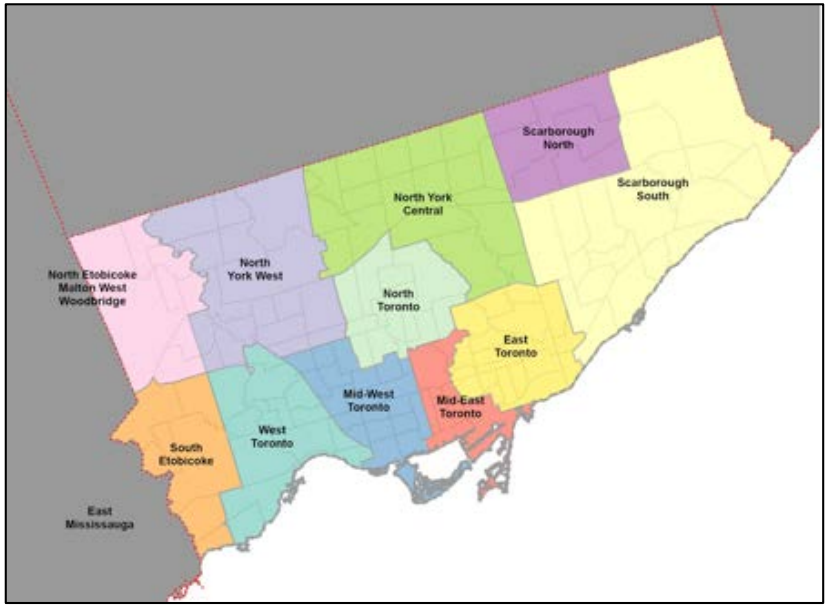
Background and Methodology

Background & Context



Ontario Health Toronto and the Canadian Health Workforce Network partnered in 2017 to co-develop a comprehensive regional-level primary care workforce planning process and toolkit to respond to the following needs:

- To address disparities in access to integrated primary care in the City of Toronto, and to inform equitable distribution of primary care workforce resources
- To facilitate evidence-based decision making for Ontario Health and Ontario Health Teams
- To support the partnership between Ontario Health Toronto and the City of Toronto aiming to develop a detailed primary care capacity plan as a means of mitigating the impact of growing population needs on the health care system

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Planning Considerations

Core Needs

- Population Needs-Based Approach
- Multi-Professional Planning
- Multiple Planning Scales (neighbourhood/subregion/city)
- Short-Term Planning Horizons (3-5 years)

Key Challenges

- High Population Mobility
- Population Growth
- Physician Retirement

The toolkit was tailored specifically to address Toronto's unique social, geographic and economic contexts

There is a focus on physicians and 13 allied health professionals (such as Nurse Practitioners, Physiotherapists, and Occupational Therapists)

Purpose & Process

Statement of Purpose

To build a body of evidence around the current (and projected future) states of population health needs and primary care service provision at a neighbourhood level within the City of Toronto

Phase 1 – Toolkit Development (2017-2018)

Targeted review and assessment of existing models

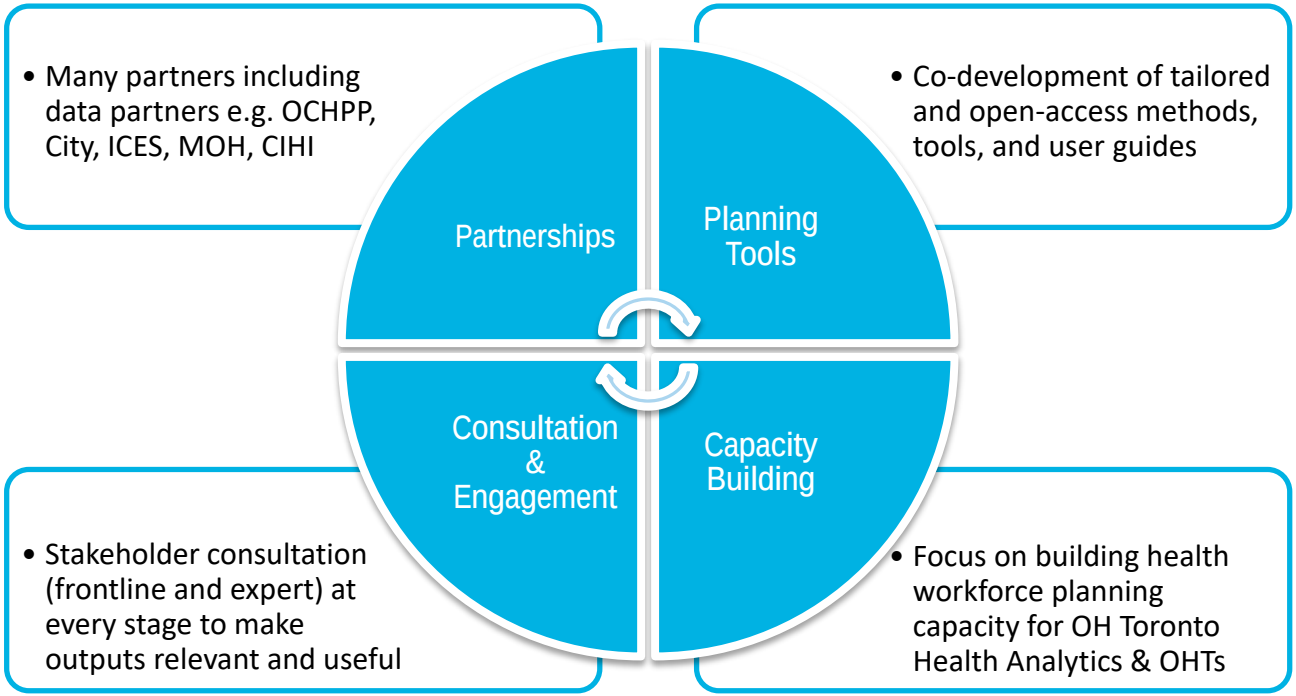
Environmental scan and assessment of available data sources

Phase 2 – Toolkit Operationalization (2019-2022)

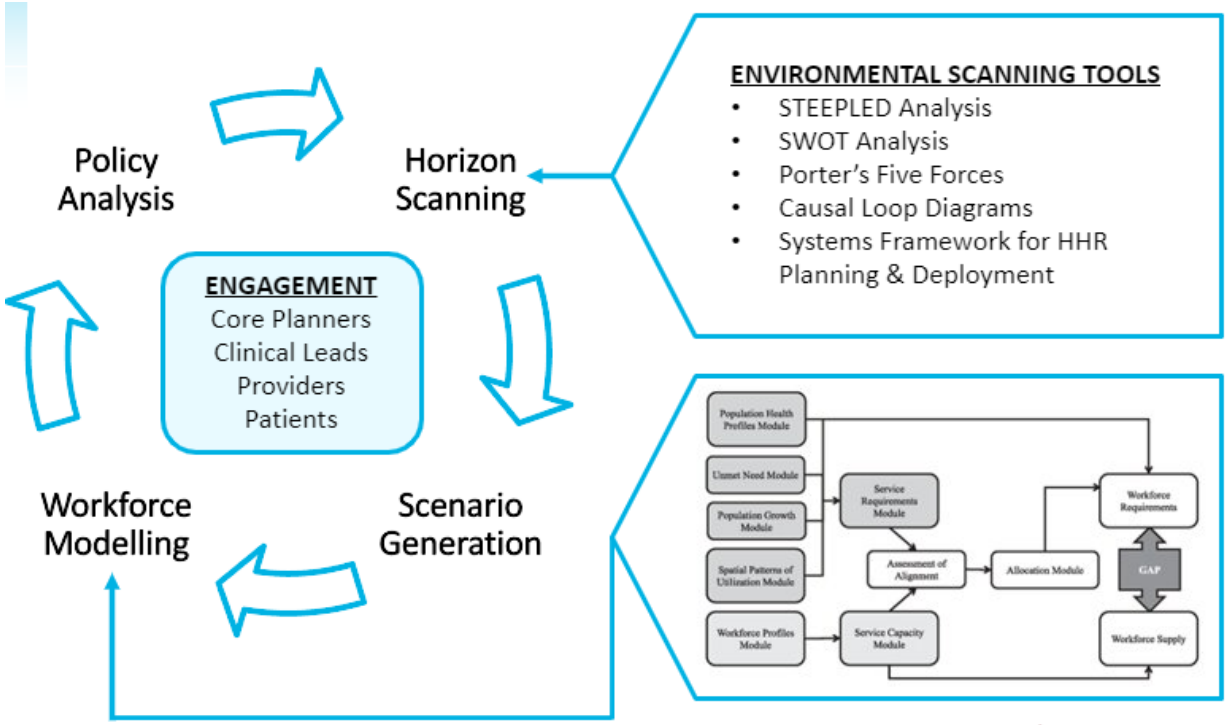
Operationalizing a first cycle of integrated, interprofessional, needs-based primary care workforce planning

Key Facilitators

Broad consultation and engagement with a focus on building partnerships and capacity



Overview of Planning Toolkit



The planning approach is iterative and interactive and includes horizon scanning, scenario generation, and quantitative workforce modelling activities, which inform policy analysis and decision-making

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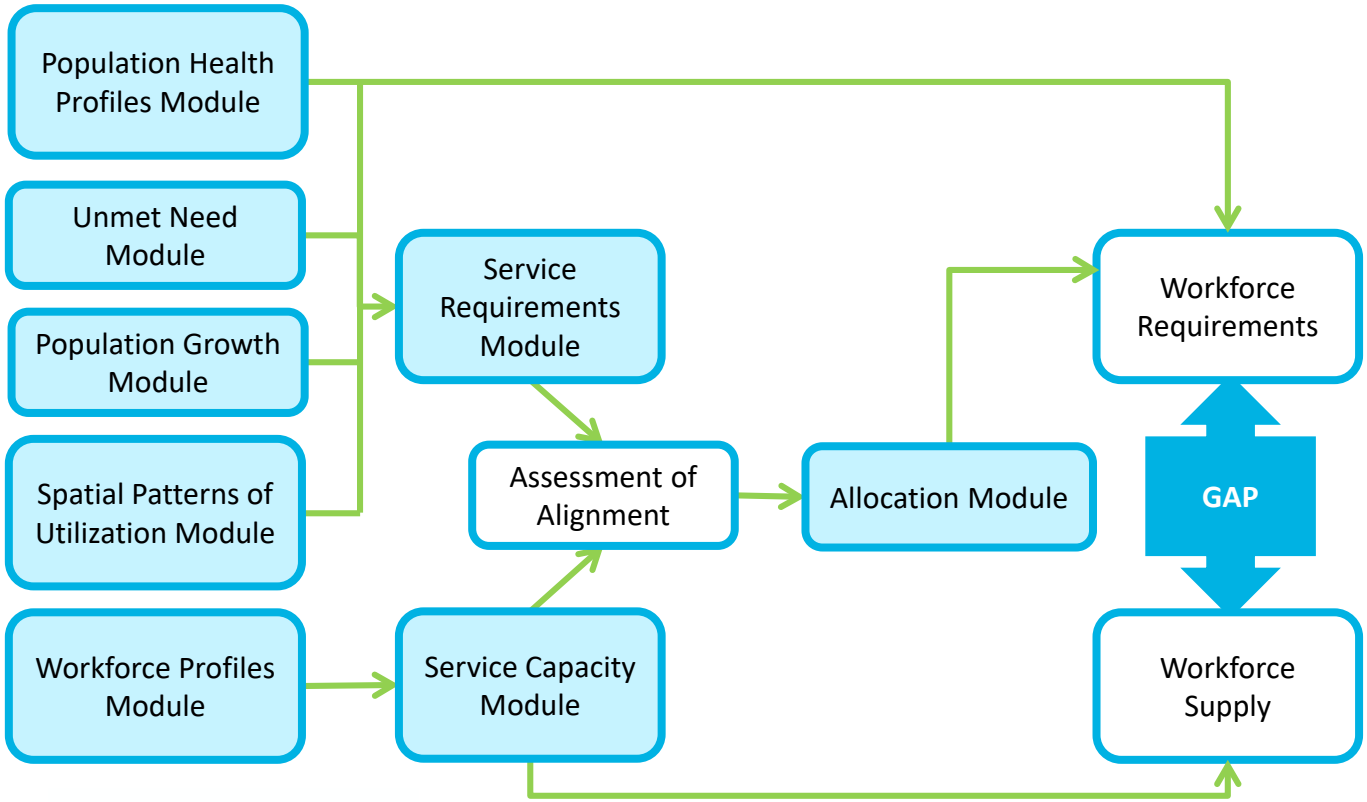
Modular Health Workforce Planning Model



The quantitative model uses data from multiple sources to assess alignment of population health needs with workforce service capacity for each neighborhood from 2016 to 2026

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Inputs into Quantitative Model

Module	Data Elements	Description/Details	Data Provider
Population Health Profiles	Population Socio-demographics & Health Status	Population characteristics that impact the need for primary care. Helps to consider the impact of changes in population characteristics on service requirements and answer the question: If population characteristics change, how will service requirements change?	Ontario Community Health Profiles Partnership (OCHPP)
Unmet Need	Primary care attachment, avoidable hospitalizations, low urgency ED visits	Characteristics related to neighbourhood-level unmet healthcare need, which can contribute to an adjustment of service requirements. Failure to consider unmet health care needs risks perpetuating current inequities.	OCHPP
Population Growth	Population Growth Projections	Using projections enables predicting service requirements for future populations. Allows focus on neighbourhoods with high population growth due to anticipated new vertical development.	City of Toronto (City Planning Division)
Spatial Patterns of Utilization	Utilization Matrix	Captures primary care utilization patterns and allows adjustment of service requirements to account for patients' care-seeking behaviours	ICES (Data) OCHPP (Mapping)
Workforce Profiles & Service Capacity	Physicians (IPDB)	Primary care physicians practicing in each neighborhood	ICES
	Allied Health Providers (HPDB)	Chiropodists, dieticians, midwives, nurse practitioners, optometrists, occupational therapists, pharmacists, psychologists, physiotherapists, registered nurses, registered practical nurses, respiratory therapists, and speech-language pathologists practicing in each neighbourhood	Ministry of Health (Health Workforce Planning Branch, Capacity Planning & Capital)
Service Requirements	Population Grouping Methodology Outputs	Estimates of primary care service requirements using the CIHI Population Grouping Methodology	Ministry of Health (Health Analytics & Insights Branch)

Outputs and Health Human Resources (HHR) Toolkit

HHR Toolkit Outputs

- Modules
- Descriptive Maps, Tables & Charts
- Neighbourhood Profiles
- Service Requirements Dashboard
- Service Capacity Dashboard
- Interactive Retirement Scenario Dashboard
- Interactive Population Growth Scenario Dashboard

Outputs available for:

- **Neighbourhoods (140)**
- **Sub-regions (11); and**
- **City of Toronto**

Static Outputs Hosted on the OCHPP website

Interactive Dashboards available by request to Ontario Health Toronto

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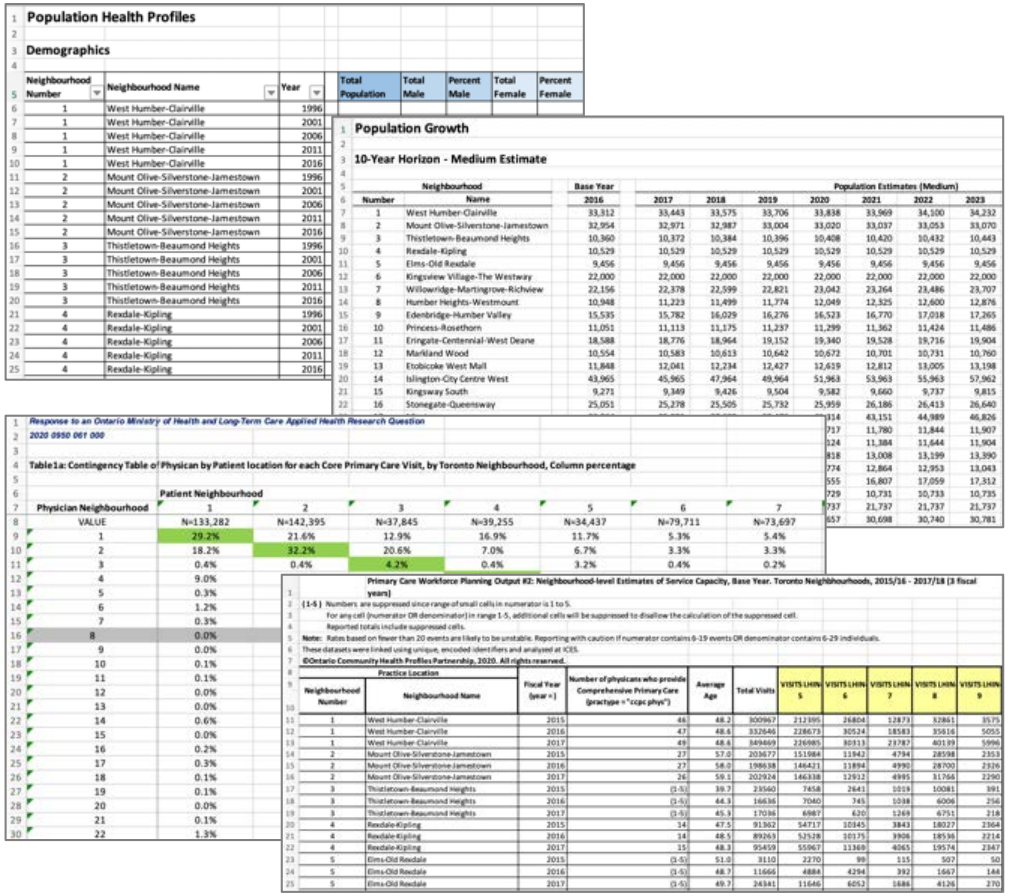
Modules

- Population Health Profiles
- Unmet Need
- Population Growth
- Spatial Patterns of Utilization
- Workforce Profiles
- Service Requirements
- Service Capacity
- Alignment



Population Health Profiles

Demographics

Neighbourhood Number	Neighbourhood Name	Year	Total Population	Total Male	Percent Male	Total Female	Percent Female
1	West Humber-Clairville	1996					
1	West Humber-Clairville	2001					
1	West Humber-Clairville	2006					
1	West Humber-Clairville	2011					
1	West Humber-Clairville	2016					
2	Mount Olive-Silverstone-Jamestown	1996					
2	Mount Olive-Silverstone-Jamestown	2001					
2	Mount Olive-Silverstone-Jamestown	2006					
2	Mount Olive-Silverstone-Jamestown	2011					
2	Mount Olive-Silverstone-Jamestown	2016					
3	Thistletown-Beaumond Heights	1996					
3	Thistletown-Beaumond Heights	2001					
3	Thistletown-Beaumond Heights	2006					
3	Thistletown-Beaumond Heights	2011					
3	Thistletown-Beaumond Heights	2016					
4	Rexdale-Kipling	1996					
4	Rexdale-Kipling	2001					
4	Rexdale-Kipling	2006					
4	Rexdale-Kipling	2011					
4	Rexdale-Kipling	2016					

Population Growth

10-Year Horizon - Medium Estimate

Neighbourhood Number	Neighbourhood Name	Base Year 2016	Population Estimates (Medium) 2017	2018	2019	2020	2021	2022	2023
1	West Humber-Clairville	33,312	33,443	33,575	33,706	33,838	33,969	34,100	34,232
2	Mount Olive-Silverstone-Jamestown	32,954	32,971	32,987	33,004	33,020	33,037	33,053	33,070
3	Thistletown-Beaumond Heights	10,360	10,372	10,384	10,396	10,408	10,420	10,432	10,443
4	Rexdale-Kipling	10,529	10,529	10,529	10,529	10,529	10,529	10,529	10,529
5	Elms-Old Rexdale	9,456	9,456	9,456	9,456	9,456	9,456	9,456	9,456
6	Kingsview Village-The Westway	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000
7	Willowridge-Martingrove-Richview	22,156	22,378	22,599	22,821	23,042	23,264	23,486	23,707
8	Humber Heights-Westmount	10,948	11,223	11,499	11,774	12,049	12,325	12,600	12,876
9	Edenbridge-Humber Valley	15,535	15,782	16,029	16,276	16,523	16,770	17,018	17,265
10	Princess-Rosethorn	11,051	11,113	11,175	11,237	11,299	11,362	11,424	11,486
11	Eringate-Centennial-West Deane	18,588	18,776	18,964	19,152	19,340	19,528	19,716	19,904
12	Markland Wood	10,554	10,583	10,613	10,642	10,672	10,701	10,731	10,760
13	Etobicoke West Mall	11,848	12,041	12,234	12,427	12,619	12,812	13,005	13,198
14	Islington-City Centre West	43,965	45,965	47,964	49,964	51,963	53,963	55,963	57,962
15	Kingsway South	9,249	9,349	9,426	9,504	9,582	9,660	9,737	9,815
16	Stonegate-Queensway	25,051	25,278	25,505	25,732	25,959	26,186	26,413	26,640
						114	43,151	44,989	46,826
						717	11,780	11,844	11,907
						524	11,384	11,644	11,904
						818	13,008	13,199	13,390
						774	12,864	12,953	13,043
						555	16,807	17,059	17,312
						729	10,731	10,733	10,735
						737	21,737	21,737	21,737
						657	30,698	30,740	30,781

Response to an Ontario Ministry of Health and Long-Term Care Applied Health Research Question

2020 0950 001 000

Table1a: Contingency Table of Physican by Patient location for each Core Primary Care Visit, by Toronto Neighbourhood, Column percentage

Physician Neighbourhood	Patient Neighbourhood 1	2	3	4	5	6	7
VALUE	N=133,282	N=142,395	N=37,845	N=39,255	N=34,437	N=79,711	N=73,697
1	29.2%	21.6%	12.9%	16.9%	11.7%	5.3%	5.4%
2	18.2%	32.2%	20.6%	7.0%	6.7%	3.3%	3.3%
3	0.4%	0.4%	4.2%	0.4%	3.2%	0.4%	0.2%
4	9.0%						
5	0.3%						
6	1.2%						
7	0.3%						
8	0.0%						
9	0.0%						
10	0.1%						
11	0.1%						
12	0.0%						
13	0.0%						
14	0.6%						
15	0.0%						
16	0.2%						
17	0.3%						
18	0.1%						
19	0.1%						
20	0.0%						
21	0.1%						
22	1.3%						

Primary Care Workforce Planning Output #2: Neighbourhood-level Estimates of Service Capacity, Base Year. Toronto Neighbourhoods, 2015/16 - 2017/18 (3 fiscal years)

(1-5) Numbers are suppressed since range of small cells in numerator is 1 to 5.
For any cell (numerator OR denominator) in range 1-5, additional cells will be suppressed to disallow the calculation of the suppressed cell.
Reported totals include suppressed cells.

Note: Rates based on fewer than 20 events are likely to be unstable. Reporting with caution if numerator contains 6-19 events OR denominator contains 6-29 individuals.

These datasets were linked using unique, encoded identifiers and analysed at ICES.

Practice Location: Neighbourhood Number	Neighbourhood Name	Fiscal Year (year =)	Number of physicans who provide Comprehensive Primary Care (practype = "ccpc phys")	Average Age	Total Visits	VISITS LHIN 5	VISITS LHIN 6	VISITS LHIN 7	VISITS LHIN 8	VISITS LHIN 9
1	West Humber-Clairville	2015	46	48.2	300967	212395	26804	12873	32861	3575
1	West Humber-Clairville	2016	47	48.6	332646	228673	30524	18583	35616	5055
1	West Humber-Clairville	2017	49	48.6	349469	226985	30313	23787	40139	5996
2	Mount Olive-Silverstone-Jamestown	2015	27	57.0	203677	151984	11342	4794	28598	2353
2	Mount Olive-Silverstone-Jamestown	2016	27	58.0	198638	146421	11894	4990	28700	2326
2	Mount Olive-Silverstone-Jamestown	2017	26	59.1	202924	146338	12912	4995	31766	2290
3	Thistletown-Beaumond Heights	2015	(1-5)	39.7	23560	7458	2641	1019	10081	391
3	Thistletown-Beaumond Heights	2016	(1-5)	44.3	16636	7040	745	1038	6006	256
3	Thistletown-Beaumond Heights	2017	(1-5)	45.3	17036	6987	620	1269	6751	218
4	Rexdale-Kipling	2015	14	47.5	91362	54717	10345	3843	18027	2364
4	Rexdale-Kipling	2016	14	48.5	89263	52528	10175	3906	18536	2214
4	Rexdale-Kipling	2017	15	48.3	95459	55067	11369	4065	19574	2347
5	Elms-Old Rexdale	2015	(1-5)	51.0	3110	2270	99	115	507	50
5	Elms-Old Rexdale	2016	(1-5)	48.7	11666	4884	4294	392	1667	144
5	Elms-Old Rexdale	2017	(1-5)	49.7	24341	11646	6052	1686	4126	270

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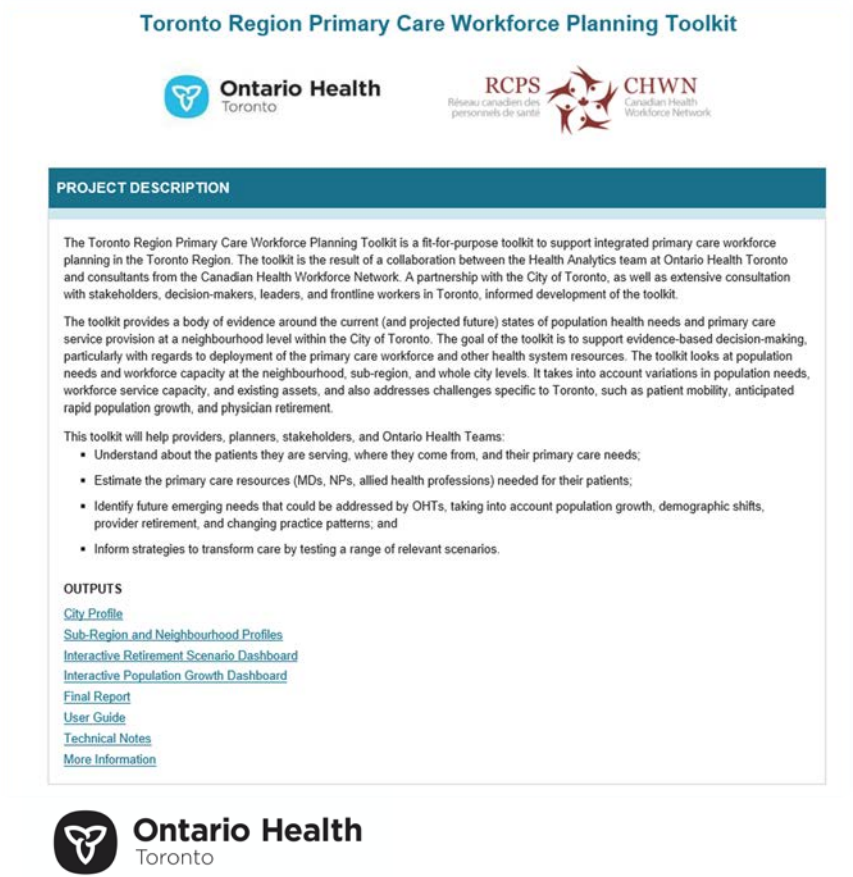
Toronto Region Primary Care Workforce Planning Toolkit Website

http://www.ontariohealthprofiles.ca/ontariohealthtoronto/index.php



Toronto Region Primary Care Workforce Planning Toolkit

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PROJECT DESCRIPTION

The Toronto Region Primary Care Workforce Planning Toolkit is a fit-for-purpose toolkit to support integrated primary care workforce planning in the Toronto Region. The toolkit is the result of a collaboration between the Health Analytics team at Ontario Health Toronto and consultants from the Canadian Health Workforce Network. A partnership with the City of Toronto, as well as extensive consultation with stakeholders, decision-makers, leaders, and frontline workers in Toronto, informed development of the toolkit.

The toolkit provides a body of evidence around the current (and projected future) states of population health needs and primary care service provision at a neighbourhood level within the City of Toronto. The goal of the toolkit is to support evidence-based decision-making, particularly with regards to deployment of the primary care workforce and other health system resources. The toolkit looks at population needs and workforce capacity at the neighbourhood, sub-region, and whole city levels. It takes into account variations in population needs, workforce service capacity, and existing assets, and also addresses challenges specific to Toronto, such as patient mobility, anticipated rapid population growth, and physician retirement.

This toolkit will help providers, planners, stakeholders, and Ontario Health Teams:

- Understand about the patients they are serving, where they come from, and their primary care needs;
- Estimate the primary care resources (MDs, NPs, allied health professions) needed for their patients;
- Identify future emerging needs that could be addressed by OHTs, taking into account population growth, demographic shifts, provider retirement, and changing practice patterns; and
- Inform strategies to transform care by testing a range of relevant scenarios.

OUTPUTS

City Profile
Sub-Region and Neighbourhood Profiles
Interactive Retirement Scenario Dashboard
Interactive Population Growth Dashboard
Final Report
User Guide
Technical Notes
More Information

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1. **City Profile** package - collection of city-level outputs that include a snapshot of the primary care landscape across the city and a series of maps.
2. **Sub-Region and Neighborhood Profiles** packages include three static dashboards on neighborhood characteristics, service requirements and service capacity.
3. **Interactive Retirement Scenario Dashboard** tool for exploring different physician retirement scenarios that are relevant to primary care planning and decision-making.
4. **Interactive Population Growth Dashboard** tool for exploring different scenarios relating to population growth, population characteristics, and workforce characteristics that are relevant to primary care planning and decision-making.
5. **Technical Notes** - provide additional details on the data, indicators and limitations of the information
6. **User Guide** - provides stepwise instructions on how to use the information in the Toolkit to understand the primary care landscape in an area and identify high needs areas that require additional resources and attention.
7. **More Information** - links to additional resources and publications related to the project.

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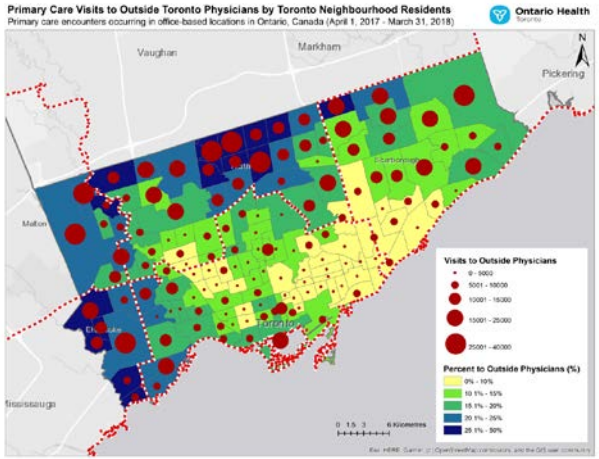
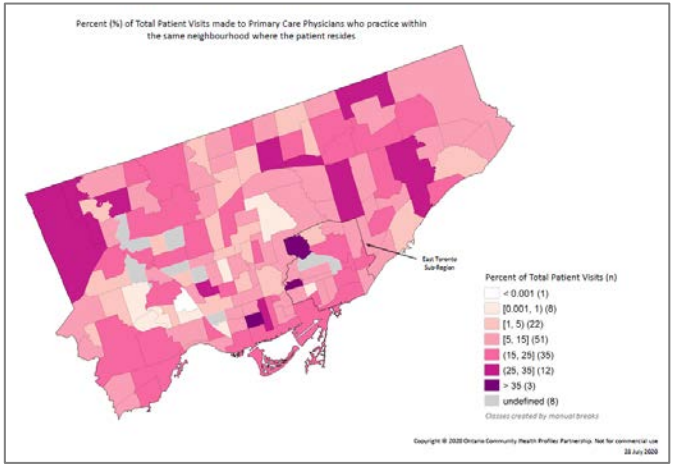
Descriptive Maps, Tables, & Charts

Example: Exploring Spatial Patterns of Utilization





Key Findings: 25% of primary care visits (2.4 million visits) in the city are for non-residents. In some neighbourhoods, patients access their primary care close to home, while in others, patients go elsewhere *(range: 0 - 45%).*

***Implications for Planning*:** Adjusting for patient mobility improves the accuracy of neighbourhood-level service requirement estimates

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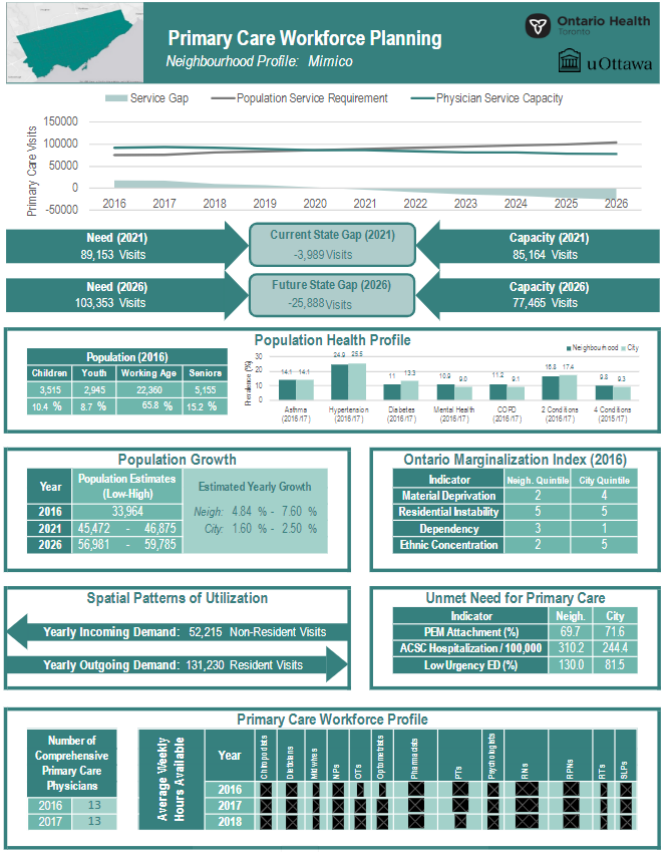
Neighbourhood Profiles

The Neighbourhood Profiles provide a snapshot of the primary care landscape in each neighbourhood, including current and future alignment between physician service requirements and service capacity, age distribution of residents, prevalence of key health conditions, estimated population growth, spatial patterns of utilization, Ontario Marginalization Index scores, indicators of unmet need for primary care, and a profile of the primary care workforce

- Population Health Profile Module
- Population Growth Module
- Spatial Patterns of Utilization Module
- Unmet Need Module
- Service Requirements Module
- Workforce Profiles Module
- Service Capacity Module

Mimico



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Service Requirements

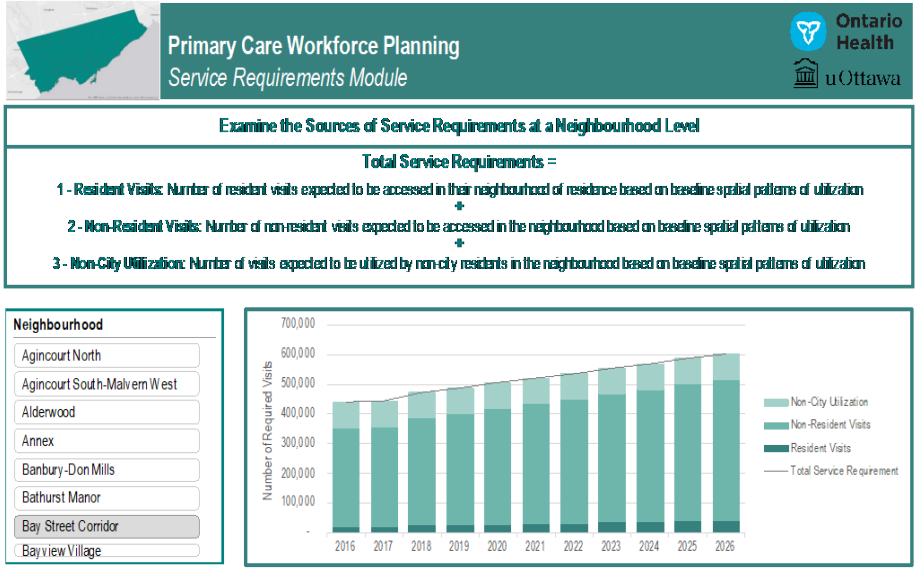
Neighbourhood-level service requirements are a function of the number of visits to a primary care physician visits required by (1) neighbourhood residents, and (2) residents of other neighbourhoods in the City, adjusted for spatial patterns of utilization and population growth, along with (3) the number of visits utilized by patients from outside the City of Toronto

Population Growth Module

Spatial Patterns of Utilization Module

Service Requirement Module

Bay Street Corridor



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Number of Residents	24,010	26,287	28,565	30,842	33,119	35,397	37,674	39,951	42,228	44,506	46,783
Resident Visits	74,474	77,525	88,601	95,665	102,729	109,792	116,856	123,920	130,983	138,047	145,111
Proportion of Care Accessed Within Home Neighbourhood	29.7%										
Resident Visits Adjusted for Spatial Patterns of Utilization	22,119	23,025	26,315	28,412	30,510	32,608	34,706	36,804	38,902	41,000	43,098
Non-Resident Visits	333,191	337,964	361,273	375,314	389,355	403,395	417,436	431,477	445,518	459,559	473,600
Non-City Utilization	86,252										
Total Service Requirement	**441,562**	**447,241**	**473,839**	**489,978**	**506,117**	**522,256**	**538,395**	**554,533**	**570,672**	**586,811**	**602,950**

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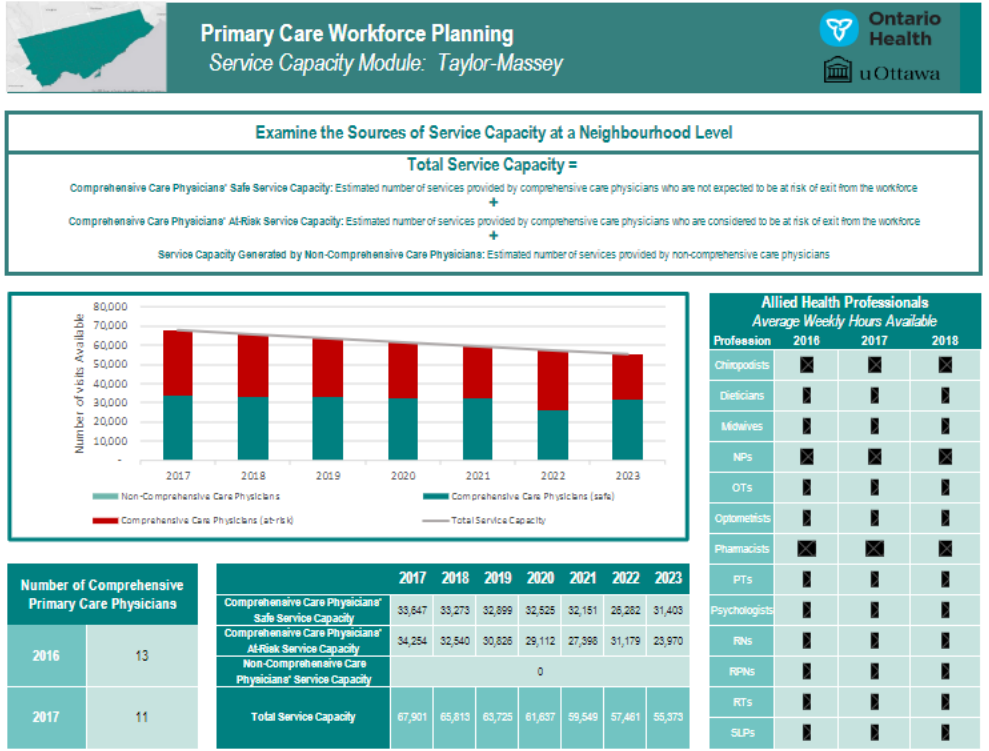
Service Capacity

Neighbourhood-level service capacity is a function of the estimated number of visits provided by (A) comprehensive primary care physicians who are not expected to exit the workforce, plus the estimated number of visits provided by (B) comprehensive care physicians who are considered to be at risk of retirement, plus the estimated number of visits provided by (C) non-comprehensive care physicians

Workforce Profiles Module

Service Capacity Module

Taylor-Massey



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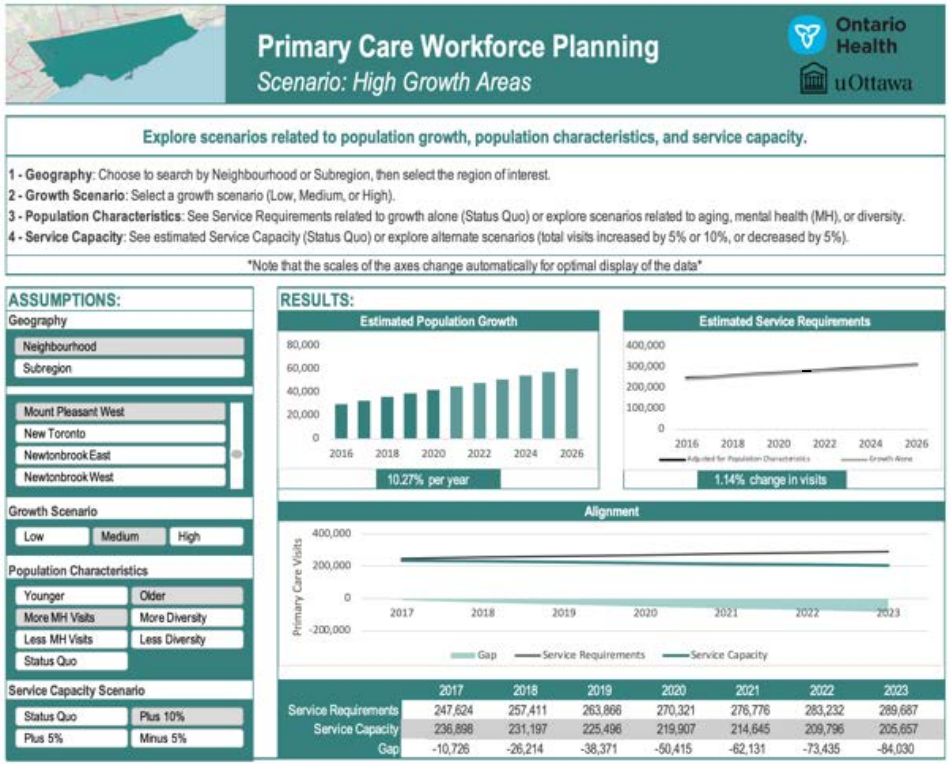
Interactive Population Growth Dashboard

Mount Pleasant West



This tool can be used to explore 84 different scenarios relevant to primary care planning and decision-making

It explores what happens to alignment when population characteristics and/or workforce capacity change

Once neighbourhoods with populations at risk of being underserved due to population growth have been identified, planning can take place to ensure that appropriate resources are available

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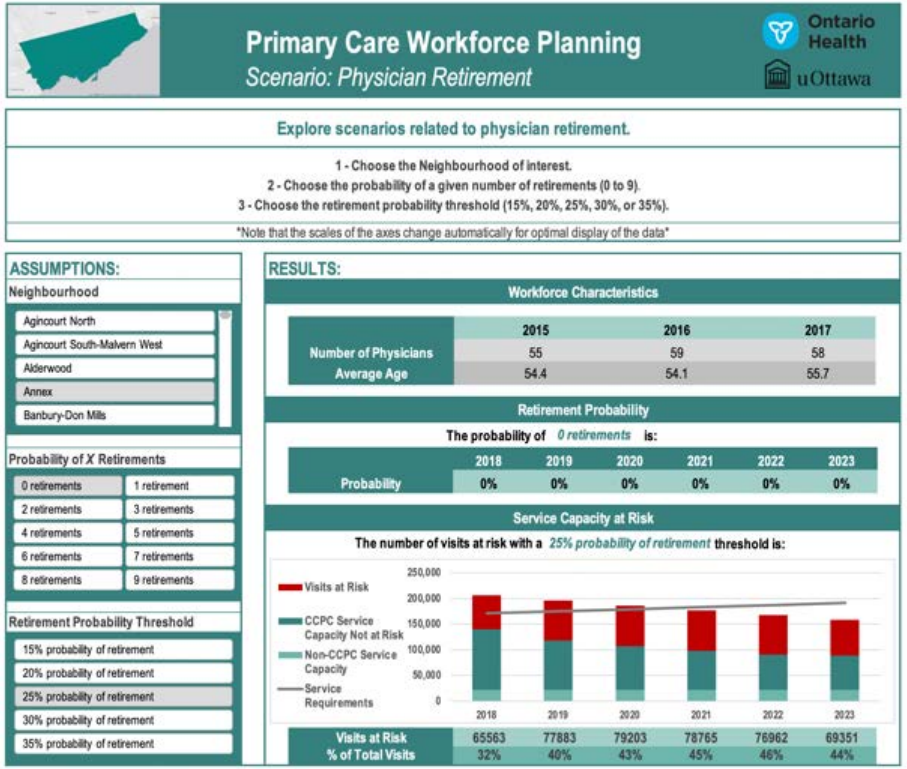
Interactive Retirement Scenario Dashboard

Annex



This tool can be used to explore different physician retirement scenarios that are relevant to primary care planning

Scenarios take into account the age structure of the physician workforce, age-related retirement probabilities, and age-related changes in service capacity

Once neighbourhoods with populations at risk of being underserved due to physician retirement have been identified, planning can take place to mitigate the impact of retirement

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Considerations, Impact, Lessons Learned, and Next Steps

Overview of Key Challenges & Strategies

Challenges	Description	Strategies
Health System Transformation	Changing roles of health system players over time (formation of Ontario Health & establishment of OHTs)	Adapt to evolving landscape to meet multiple stakeholders' needs
What is Primary Care?	To plan for primary care, we must be able to define and delineate primary care providers and activities	Adopt a holistic definition of primary care that reflects the interprofessional nature of integrated & comprehensive primary care
Data Availability & Accessibility	Difficulty accessing physician and allied health professional data that are high quality, granular, comprehensive, and timely	Advocate to close data gaps & improve access to data, and adjust model to accommodate aggregate-level data & third-party analysis
Neighbourhood-Level Planning	Mobility of patients and service providers across the City of Toronto and beyond	Mobilize available data to understand variability in patient flow across neighbourhoods
Estimating Unmet Need	Limited data are available to accurately and comprehensively estimate unmet need	Use quantitative indicators as a baseline for consultations
Changing Landscape of Primary Care Planning	Changes caused by the COVID-19 pandemic (virtual care, early physician retirement, and the changing roles of pharmacies)	Use inclusive data synthesis and scenario analyses to address new planning considerations

Impact Across System Stakeholders

The approach will help providers, planners, stakeholders:

- ✓ Understand more about the **patients they are serving**, **where they come from**, and what their **primary care needs** are
- ✓ Estimate the **primary care resources (MDs, NPs, allied health professions) needed** to care for patients
- ✓ Identify **emerging needs that could be addressed by OHTs**, taking into account population growth, demographic shifts, provider retirement, and changing practice patterns
- ✓ **Inform strategies to transform care** by testing a range of relevant scenarios
- ✓ **Build capacity for primary care planning** on the part of Ontario Health Toronto, OHTs and system stakeholders

Key Insights and Lessons Learned

The following are crucial for comprehensive primary care workforce planning in Toronto and in Ontario:

- Given patient mobility, **collaborative planning** amongst Sub-Regions and OHTs is needed (care seeking patterns in one area can be influenced by what is happening in other areas)
- Given the complexity of workforce and population trends, a **holistic view** of various factors at play in a certain area is required when doing primary care planning
- Given the rapidly changing primary care landscape, a **comprehensive and timely primary care census and database** will help to maximize the public good that results from health workforce planning
- Objective data in the toolkit can be complemented and supplemented with additional **local knowledge and information** to get a fuller picture of local primary care needs
- **Engagement** with frontline providers and relevant stakeholders to validate results is important
- Planners should consider innovative ways to address primary care gaps and exercise **flexibility and ingenuity** in developing solutions
- Updated policies that respond to the need for health workforce planning and support the development of **planning capacity, literacy, and engagement** are urgently needed

Conclusions and Future Directions

- This project is a case study in **leading practice health workforce planning** that responds to an urgent need for “intelligence” to support better health system decision-making
- Ontario Health Toronto and relevant stakeholders e.g. OHTs will use the processes, data, and outputs, with **input and validation from local and frontline stakeholders**
- **Still remaining:** Ongoing refinement, data updating (with 2021 Census information, updated population projections, primary care utilization patterns, and more current workforce information), evaluation, and operationalization of the allocation module
- **Spread and scale:** Share the toolkit and the model with other agencies/groups doing primary care workforce planning

More Information

More Information

Review the Outputs

Outputs are posted on the **Ontario Community Health Profiles Partnership** website:
http://www.ontariohealthprofiles.ca/ontariohealthtoronto/index.php

Read our Publications

Co-developing an integrated primary care workforce planning approach at a regional level: overarching framework and guiding principles
Ivy Lynn Bourgeault, Caroline Chamberland-Rowe & Sarah Simkin
https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-021-00578-z

An integrated primary care workforce planning toolkit at the regional level (part 1): qualitative tools compiled for decision-makers in Toronto, Canada
Caroline Chamberland-Rowe, Sarah Simkin & Ivy Lynn Bourgeault
https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-021-00610-2

An integrated primary care workforce planning toolkit at the regional level (part 2): quantitative tools compiled for decision-makers in Toronto, Canada
Sarah Simkin, Caroline Chamberland-Rowe & Ivy Lynn Bourgeault
https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-021-00595-y

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